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Listening Comprehension Achievement and Brain Dominance

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Abstract

The purpose of the present study is to determine the effects of the language curricula designed in compliance with the principles of Representational Systems on the students' listening comprehension achievement with regard to brain dominance. The population of this study was 32 students (21 female, 11 male) from the English Language Teaching Department of a university in the Spring Term of the 2010-2011 Academic Year. The research presented in this study was based on a randomized pretest posttest control group design. In this research, a brain dominance inventory, and a listening comprehension test were used. In the analysis of the data, arithmetic mean, standard deviation, percentage, t-test and single-factor covariance analysis were administered. The significance level of the tests was .05. As a result of the research, there was no statistically significant difference between listening comprehension achievements of the experimental and the control group students with regard to their hemispheric dominance.

Key Words: Representational systems, brain dominance, listening comprehension, achievement

1. Introduction

Language learning is a long, painful and complex process which requires knowledge on fundamental grammar, vocabulary, phonological elements, and communicative functions along with the four basic language skills—listening, speaking, reading, and writing, which will be used to meet the communicative needs of learners. Of all these four skills, listening integrated with speaking is, perhaps, the most frequently used one for different functions of language. Contrary to the commonly held belief, "Listening comprehension is anything but a passive activity. It is a complex, active process in which the listener must discriminate between sounds, understand vocabulary and grammatical structures, interpret stress and intonation, retain what was gathered in all of the above, and interpret it within the immediate as well as the larger sociocultural context of the utterance" (Vandergrift, 1999, p.168). Listening "requires listeners to make meaning from the oral input by drawing upon their background knowledge of the world and of the second language (Byrnes, 1984; Nagle & Sanders, 1986; Young, 1997) and produce information in their long term memory and make their own interpretations of the spoken passages (Murphy, 1985; Mendelsohn, 1994; Young, 1997). In other words, listeners need to be active processors of information" (Young, 1997) (cited in Bidabadi, 2011, p.26). "It is also known that listeners use a variety of mental processes to give meaning to the information they listen to" (Coşkun, 2010, p. 35) "Unless properly and pedagogically designed with various types of activities, it can be a boring and stressful activity for

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all levels of learners, especially beginning and intermediate language learners, who are often unable to process information quickly enough to make sense of what is said" (Goh and Taib, 2006, p.222).Therefore, how the listening is planned and given to the students is as important as what is given to them.

While the learners acquire the basic components of language such as phonological elements, grammar, vocabulary and four language skills, educators try to make use of the outcomes related to the researches of individual learning differences, especially learning styles such as field dependence/independence, hemispheric dominance, representational systems and learning strategies, which, they believe, will facilitate the learning processes (Kök, 2010, 144). A full understanding of learning styles is a fundamental tool that teachers should employ to help them appreciate their learners and to build their teaching and instructional practices to optimize their students' learning experiences in schools (Saleh, 1997, p.31). As Lightbown and Spada (1999, p.58) state "Learners have clear preferences for how they go about learning new material". They also maintain that knowing and taking individual characteristics into account can create better learning conditions in the classroom and make it possible for almost all learners to succeed in language learning. Therefore, while practicing in English learning environments, the fact that the teacher provides the learners with visual, auditory and kinesthetic activities can enhance learners' motivation thereby increasing their academic achievement (Revell and Norman, 1999).

"We perceive the world through our five sense organs or through our representational systems. In Neurolinguistic Programming, these five sense organs are shortly referred to as (V)isual (see, look), (A)uditory (hear, listen), (K)inesthetic (feel, sense), (O)lfactory (smell) and (G)ustatory (taste)" (Kök, 2005, p.47). Grinder and Bandler (1976 cited in Kraft, 1982, p.10) point out that unimpaired humans have a minimum of five sensory 'input channels'…. These sensory data may be transformed and stored in an imaginal, or 'analogical' representational system most closely related to the specific type of sensory data". "In describing the process of how we use our nervous system (neurology and brain) to create our model of the world which we then use to navigate life, after our nervous system/brain inputs information from the world via our senses, we use those sense modalities of awareness for processing ("thinking") and storing ("memory"). We designate these as representational systems; by them we re-present to ourselves information about what we have seen, heard, felt, etc." (Hall & Bodenhamer, 2000, p.IX).

Another point to increase the functions of representational systems is the concept of hemispheric dominance. Awareness of the characteristics of the hemispheric dominance of the families and educational institutions will positively affect the interfamily communication, and providing students with a learning environment in which the characteristics of both of the hemispheres of the brain are taken into consideration will enable the students to have better achievement and more positive attitudes towards learning English (Kök, 2007, p.50).

Although the anatomical differences between the left and right hemispheres are not so significant, the way they function differs greatly from one another. Control over the body's functions and sensation is divided between the two hemispheres evenly, but in a crossed fashion. In other words, the left hemisphere controls the right side of the body and vise versa (Hergenhahn & Olson, 2005, p.394).

Left brain dominant learners use their logic more than their intuitions. They are more detail oriented. They are reality based learners and they learn better with facts and rules. They have a very strong sense of time. They learn with orders and patterns, thereby acquiring the grammatical rules of the language. They can remember names of objects; therefore, they are better off with vocabulary and retention of the lexis. They can form strategies, and are practical in finding solutions. They always like to feel safe. On the other hand, right brain learners are intuition based and work with their hunches. They are more fantasy based, and use their imagination. They are not so strong with the time conception. They are better with symbols and images and learn better with the concrete, and have better perception of space. They have a tendency to see more of the whole than the details. They are more artistic and like to take risks. (Brein-Pierson, 1988; Saleh, 1997; Gredler, 2005, p.100; Krashen, 1988, p.70). "The right hemisphere perceives and remembers visual, tactile, and auditory images; it is more efficient in processing holistic, integrative, and emotional information" (Brown, 2007, p.125).

Bearing the hemispheric characteristics and differences between the learners, if listening activities based on the primary representational system could be used rather than those of the traditional ones, which could be defined as "teacher centered" and "traditional", language learning might be more effective and enjoyable. In this

particular study, keeping all those facts in mind, to help develop listening comprehension in formal classroom environment, whether or not the aforementioned points can be put into practice will be tested.

Purpose of the Study

The purpose of the study is to determine the effects of the language curricula designed in compliance with the principles of representational systems, which is considered as a model examining how human mind processes information in NLP (Neurolinguistic Programming), on the students' listening comprehension achievement with regard to brain dominance.

2. Method

The population of this study was 32 students (21 female, 11 male), who were studying "*Listening and pronunciation*" class at the English Language Teaching Department (ELT) of a university in the Spring Term of the 2010-2011 Academic Year.

2.1. Model of the Research

The research presented in this study was based on a randomized pretest posttest control group design.

2.2. Data Collecting Instruments

The data of the research were gathered by a multiple choice and information completion type of listening achievement test for English, and the Brain Dominance Inventory.

The independent variables of the research were the teaching practices based on the principles of representational systems, and the brain dominance. The dependent variable of the research, on the other hand, was the students' academic achievements. Therefore, to measure the variables of the research, the following scales were used: to determine the brain dominance of the students, the brain dominance inventory which was rearranged by Davis & et al. (1994) was used. The Cronbach Alpha reliability of the brain dominance inventory, which was translated and adapted into Turkish by Kök (2005), was .87. In addition to the scales listed above, the students were given a 25-item multiple choice listening comprehension achievement test, the KR-20 reliability of which was .89 to assess the listening comprehension achievement of the students. In the analysis of the data, t-test significance test was administered. The significance level of the tests was .05.

2.3. Analysis and Interpretation of Data

In the analyses of the obtained data, a valid statistics program was used. While analyzing the data, the statistical techniques: frequency, arithmetic means, percentage and standard deviation were made use of. When the two groups were compared and contrasted, the t-Test was administered. The significance level was taken as .05.

2.4. Statement of the problem

What are the effects, if any at all, of education designed according to the principles of representational systems and those of traditional education on the students' listening comprehension achievements with regard to brain dominance?

2.5. Research Question:

Are there any significant differences between the listening comprehension achievement levels of students who received language education based on the principles of representational systems and those students who received traditional language education with regard to brain dominance?

3. Findings and Interpretation:

With regard to the research question, the following information can be provided:

Table 1 Differences between the achievement levels of the groups with regard to the results between the pre and post tests and the results of t-test

Brain Dominance	Groups	N	$\overline{X}_{\text{post}} - \overline{X}_{\text{pre}} = \overline{X}_{\text{difference}}$	Se	t Value	p Value	Significance Level

Left Brain	Experimental	7	21.71	7.85	.96	.35	p> .05
	Control	8	12.50	5.78			
Right Brain	Experimental	9	26.67	4.22	.33	.75	p> .05
	Control	8	29.50	7.92			

The achievement levels of the students as a result of the measurement between the pre and post tests with regard to their brain dominance:

Left brain dominant experimental group students' progress level was $\overline{X}$ difference=21.71; and the control group students' was $\overline{X}$ difference=12.50. The difference between the groups was 9.21 (at t=-.96, p>0.05 level), which was not statistically significant.

Right brain dominant experimental group students' progress level, on the other hand, was $\overline{X}$ difference=26,67 and the control group students' was $\overline{X}$ difference=29.50. The 2.83 point difference observed between the groups was not statistically significant at (t=.33, p>.05) level.

Table 2 According to brain dominance variable, the differences of academic achievements obtained after calculating the differences between the pre and post test scores of the in-group and out-group students, and the t-test results

Groups	Brain Dominance	N	$\overline{X}_{post} - \overline{X}_{pre} = \overline{X}_{difference}$	Sd	Se	t Value	p Value	Significance Level
Experimental	Left	7	21.71	20.76	7.84	.59	.06	p> .05
	Right	9	26.67	12.65	4.22			
Control	Left	8	12.50	16.34	5.78	1.73	.11	p> .05
	Right	8	29.50	22.42	7.92			

The progress level which was obtained by comparison of the pre and post test results of the left brain dominant students in the experimental group was $\overline{X}$ difference=21.71, and those of the right brain dominant students was $\overline{X}$ difference=26.67. The 4.96 point difference obtained by the left brain dominant students was not found statistically significant at (t= .59, p>.05) level.

The progress level which was obtained by comparison of the pre and post test results of the left brain dominant students in the control group was $\overline{X}$ difference=12.50, and those of the right brain dominant students was $\overline{X}$ difference=29.50. The 17 point difference obtained by the right brain dominant students was not found statistically significant at (t= 1.73, p>.05) level.

4. Conclusions-Discussions and Suggestions:

The data was acquired from the research by comparing the groups in two different ways: One was to their hemispheric dominance as experimental versus control groups for both the left brain dominant and right brain dominant students; the other one was to the subject groups as left versus right for both experimental and control groups.

As a result of the study to the research question whether there was a difference between the listening comprehension achievements of the students who received English Language education designed in compliance with the principles of primary representational systems and those students who were educated with the traditional methods with regard to the brain dominance, no statistically significant difference was observed between the right brain experimental and right brain control groups. Although there was a considerable difference (9.21 points, 57.5 %) between the left brain students in favor of the experimental group, it was not found to be statistically significant. When the experimental groups as left versus right brained students were compared, there was a difference between the groups in favor of the right brained students in both experimental and control groups. However, the differences were not figured out to be statistically significant. Among the reasons why no statistically significant results were figured out was that the duration in which the research was carried out was not long enough (Only three weeks—four hours a week totaling 12 hours in all) to improve listening comprehension achievement.

To conclude, as the results of this study and and the others in literature indicated, English Language education based on the principles of representational systems provided better academic achievement for the students though not statistically significant for both left and right brain dominant students.

In compliance with the literature and research findings, the following suggestions can be offered to education planners, teacher trainers, education managers, language teachers and coursebook writers and those who will do research in this field:

1. Teaching through a diversity of techniques by enriching language education in the classroom involving more senses (representational systems) when interacting with the students regardless of their hemispheric dominance, learning styles and characteristics is believed to provide the students with better interest in learning and increase the success. (Kök, 2007, p.57). The education planners should not only design the content of the language instruction curricula but also the way learners should cope with the processes of language learning (Nunan, 1996).
2. It is maintained highly advisable to note that improving the listening comprehension achievements of learners takes considerable duration of time; therefore, while the researchers do studies on students' academic achievements, longer periods are suggested to provide more accurate and reliable results.

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